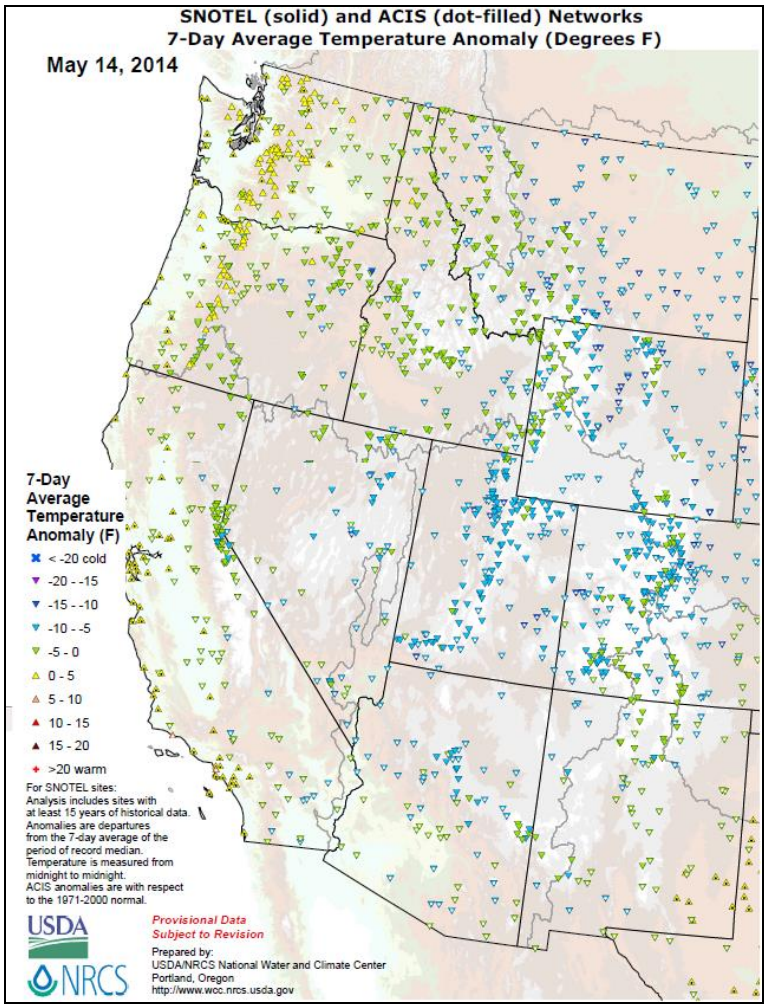
United States Department of Agriculture

Natural Resources Conservation Service
P.O. Box 2890
Washington, D.C. 20013

Weekly Snowpack / Drought Monitor Update

May 15, 2014

Temperature

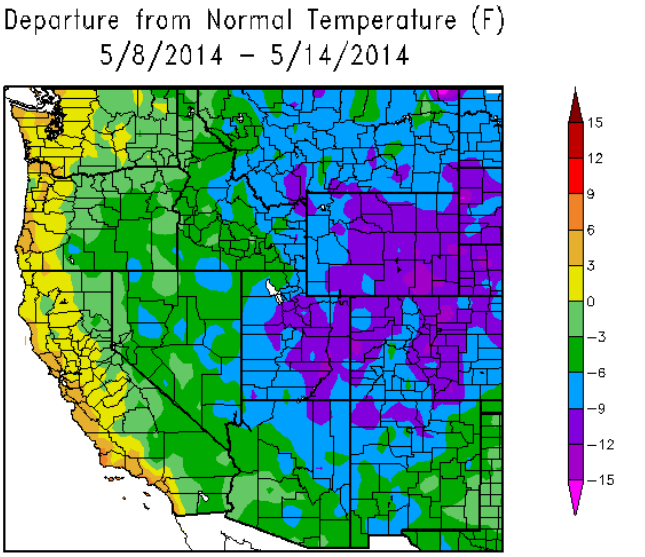


SNOTEL and ACIS 7-day temperature anomaly shows temperatures well below normal over the Wasatch and central-north Rockies. Above normal temperatures prevailed over the northern Cascades.

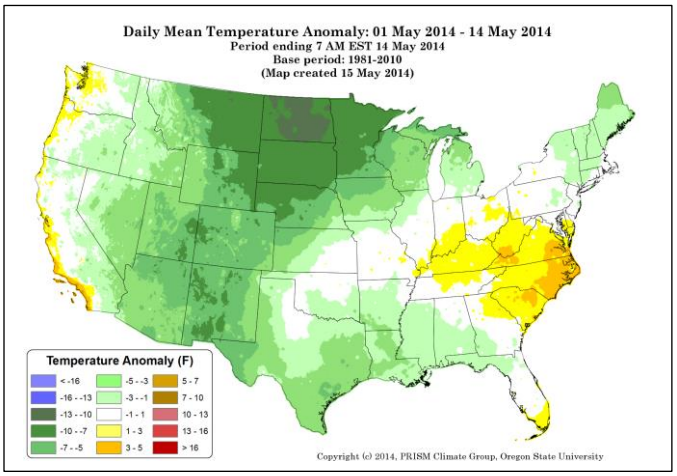
Click on most maps in this report to enlarge and see latest available update.

ACIS 7-day average temperature anomalies, ending May 14, show the greatest negative temperature departures over southeast Wyoming and northeast Colorado (<-12°F). The greatest positive temperature departures occurred along the immediate Pacific Coast (>+3°F).

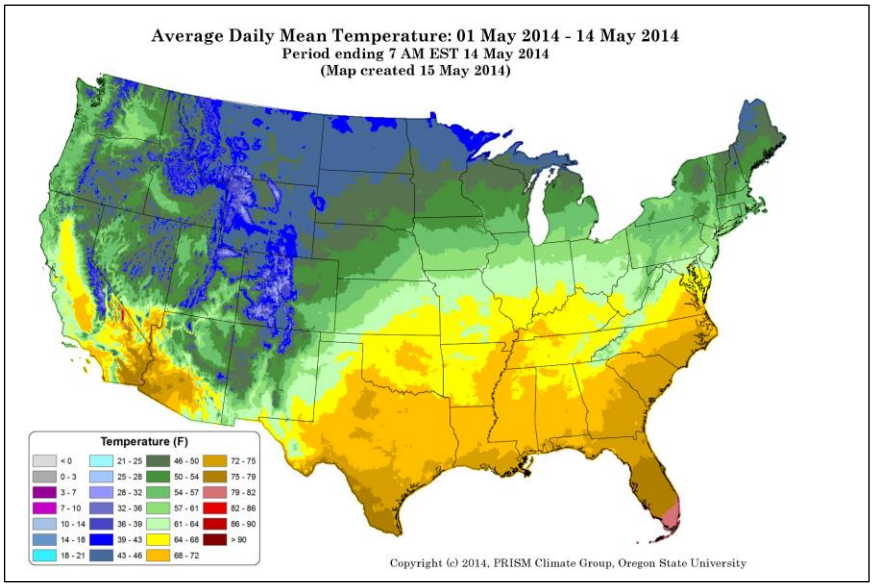
- ✓ Also, see Dashboard and the Westwide Drought Tracker.



This preliminary PRISM temperature map contains all available network data, including SNOTEL data, and will be updated periodically as additional data become available and are quality controlled.



← For the first half of May 2014, the temperature anomaly map shows a cold pattern over the interior sections of the country, especially over northern North Dakota (<-10°F). Above normal temperatures dominated parts of coastal southern California and eastern North Carolina (>+3°F).



Forecasting the start of the spring snowmelt and subsequent runoff depends, in part, on when average temperatures warm to above freezing. Monitoring this type of climate map is a useful way to gauge when this onset is likely to occur.

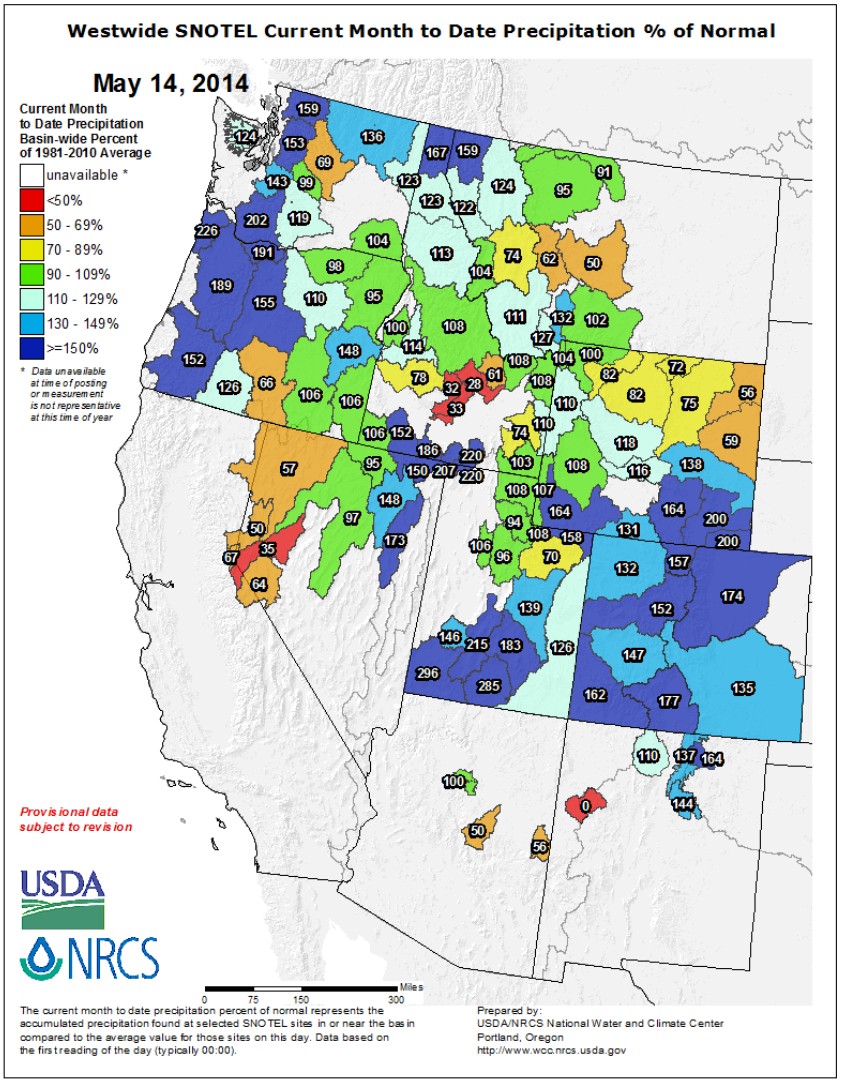
Note that May average temperatures are finally above freezing everywhere except the highest peaks in the Rockies.

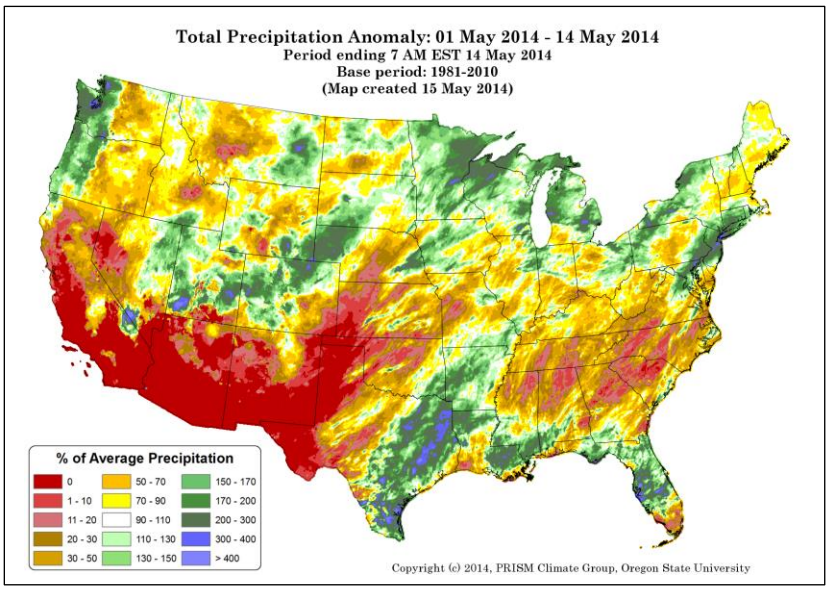
Precipitation

The mid-May SNOTEL precipitation percent of normal map shows predominately deficit conditions over much of northern Wyoming, the northwestern Great Basin, central Montana, and the southern half of Arizona and New Mexico.

Surpluses are noted over the Cascades, coastal ranges of Washington, northern Idaho, northeast Nevada, southern halves of Utah and Wyoming, northern New Mexico, and all of Colorado.

A significant springtime storm hit the central Rocky Mountain region earlier this week.



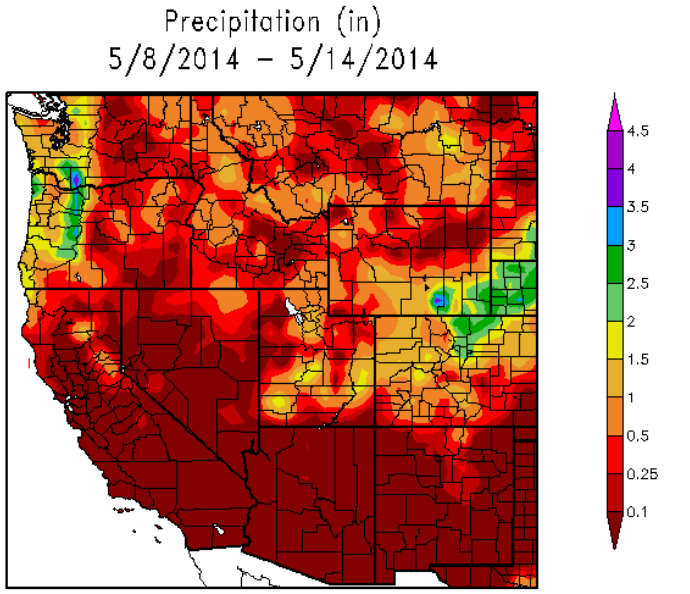


← Thus far for May, the precipitation anomaly pattern reveals surplus moisture scattered across the nation. Parts of the Southeast and Southwest, including California have seen little or no precipitation.

This preliminary daily PRISM precipitation map contains all available network data, including SNOTEL data, and is updated periodically as additional data become available and are quality controlled.

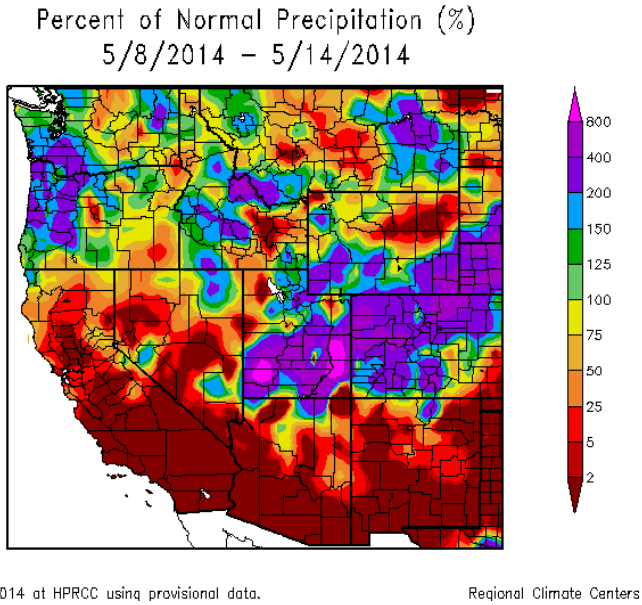
The ACIS 7-day total precipitation map shows abundant moisture falling over parts of the Cascades and northeastward from north-central Colorado to the Badlands of South Dakota.

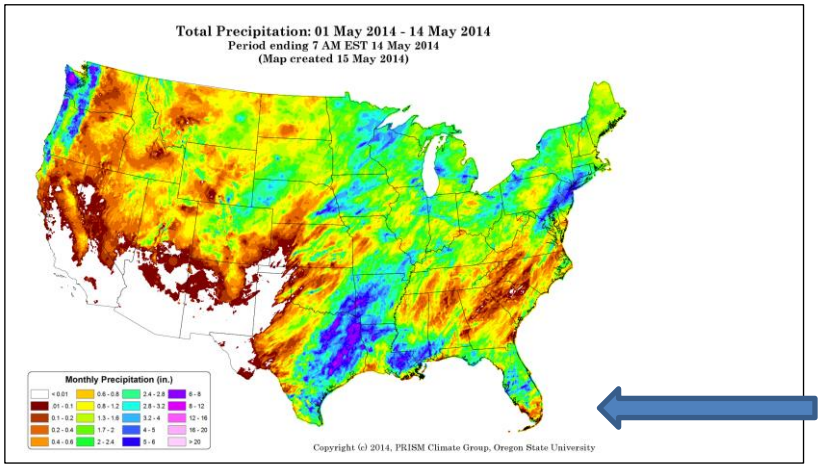
Little if any precipitation occurred over vast areas of the West including the Southwest, much of California, and the Great Basin. Scattered areas over the northern tier states failed to receive wetting amounts (>0.10").



As would be expected based on the map above, this map reflects a similar pattern of precipitation that fell across the West during the week. →

A slow moving low pressure system was responsible for the band of moisture from Utah to the north-central Great Plains. A series of transiting weather systems helped to keep western Oregon and Washington damp during the early part of this period, before a strong high pressure ridge moved in and caused a brief heat wave.





← The May 2014 **precipitation** map thus far indicates no precipitation has fallen over large regions of western Texas to southern California. Eastern Texas and the western mountains in Oregon and Washington have had the highest totals. Some high totals are also noted over the mid-Atlantic into southern New England.

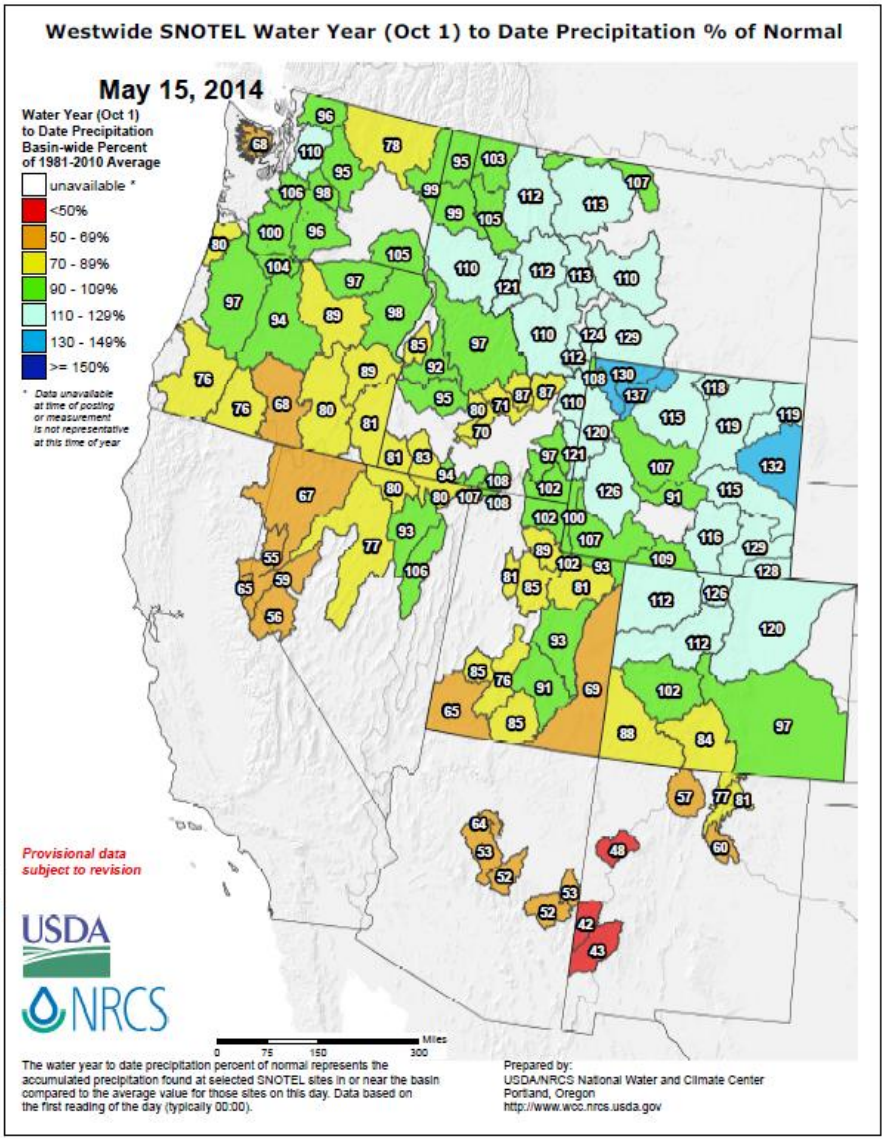
See Go Hydrology for current and forecast conditions over southern Florida.

For the 2014 Water Year that began on October 1, 2013, only central Montana, most of Wyoming, and northern Colorado are experiencing surpluses.

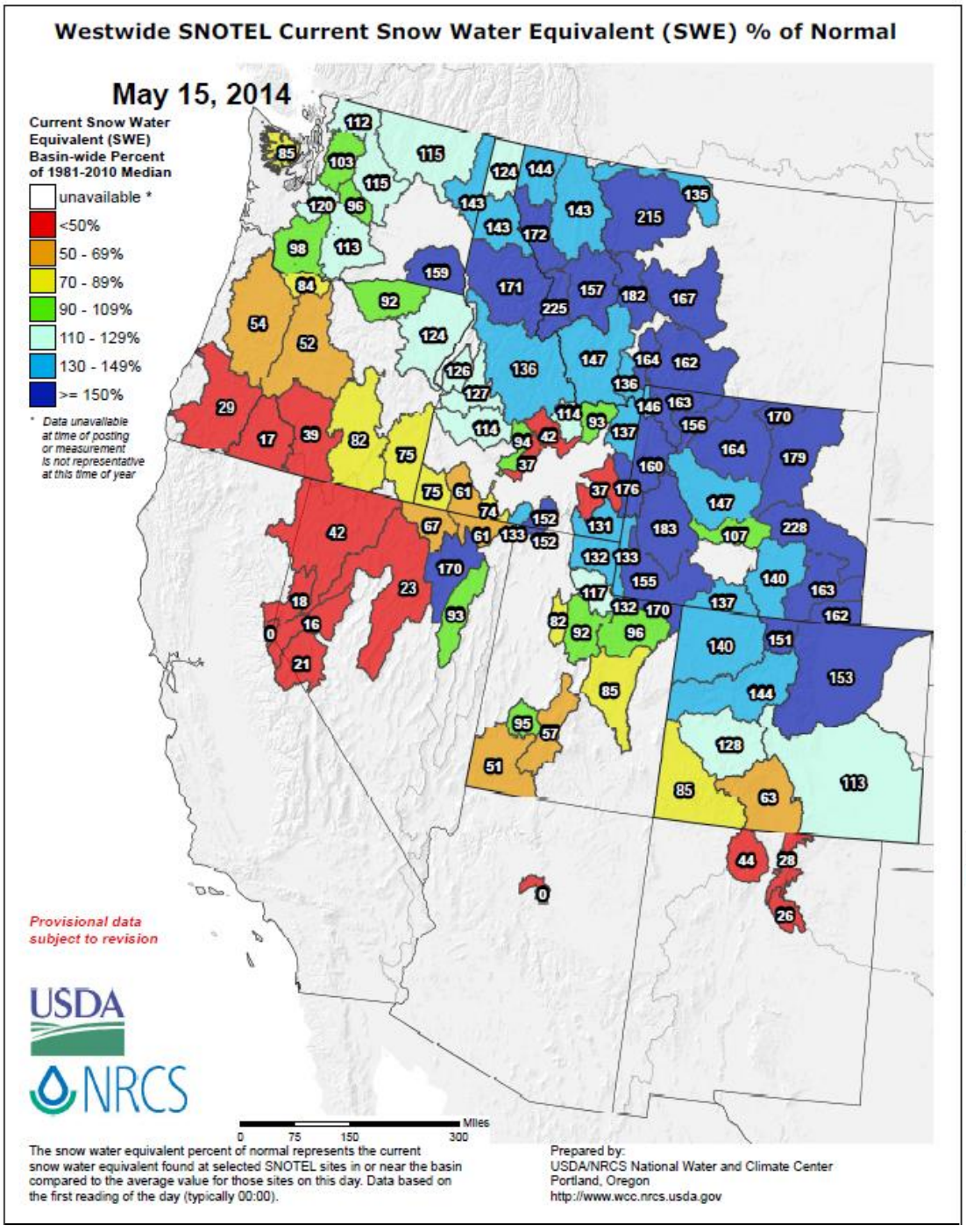
Near average conditions dominated the northern half of the Cascades, the northern half of Idaho, northwestern-most Montana, the Lower Bear River in eastern Utah and southeast Idaho, and parts of the southern half of Colorado.

The largest deficits are centered over southern Oregon, western Nevada, southern and eastern Utah, Arizona, and New Mexico.

As the Water Year advances, it becomes more difficult for river basins to change bin categories.



Snow



Snow Water Equivalent (SWE) values are generally higher east of the Continental Divide and over the Columbia River drainage. During this time of year, the percent of normal snowpack can increase without additional moisture if the melt is delayed by colder than normal temperatures. This week, a significant springtime snowstorm hit the Central Rockies with some locales exceeding two feet. However, it should be noted that although the percent of normal snow water equivalent (SWE) values exceed 100 percent in several river basins over the Washington Cascades and northern panhandle of Idaho, this does not necessarily result in surplus snowmelt. Peak SWE, on average, occurs during the second half of March and into early April for these Northwest Pacific areas, when values were not as high as they are now.

The water supply forecasts issued by the National Water and Climate Center for the spring and summer months are now available. See the latest: National Snow Analysis and West-Wide Water Supply Forecast Tables.

Weather and Drought Summary

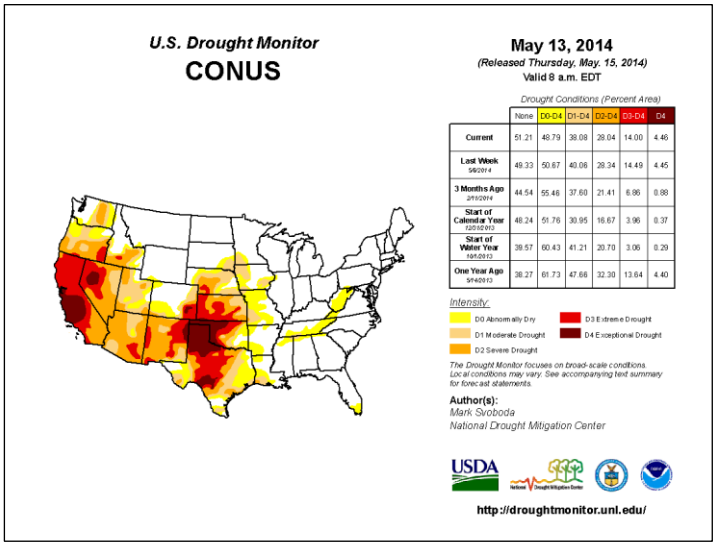
National Drought Summary – May 13, 2014

The following **Weather and Drought Summary** is provided by this week's NDMC Drought Author: Mark Svoboda, NDMC.

USDM Map Services: (contains archived maps)

"For the contiguous 48 states, the U.S. Drought Monitor showed 38.08 percent of the area in moderate drought or worse, compared with 40.06 percent a week earlier. D4 has increased to 4.46 from 4.45 percent.

For all 50 U.S. states and Puerto Rico, the U.S. Drought Monitor showed 31.81 percent of the area in moderate drought or worse, compared with 33.47 percent a week earlier."



Current Drought Monitor weekly summary. The exceptional D4 levels of drought are scattered across CA, NV, CO, TX, OK, and NM.

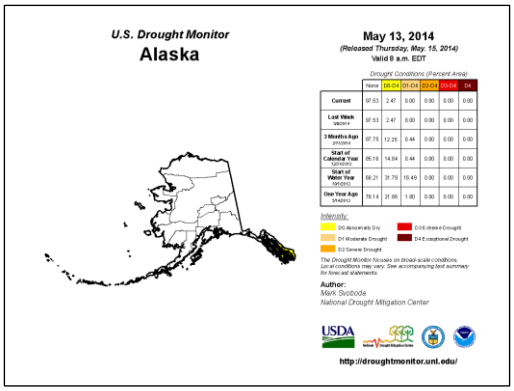
The latest drought indicator blend and component percentiles spreadsheet is a great resource for climate division drought statistics. This link is for the latest Drought Outlook (forecast). See climatological rankings.

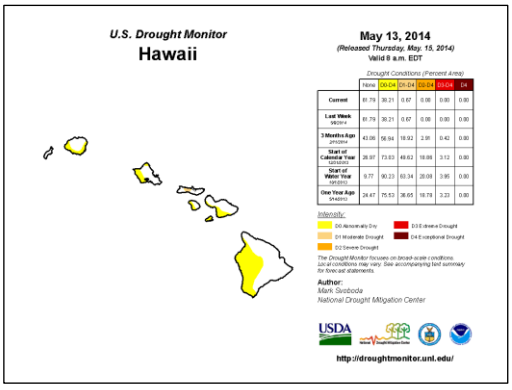
For more drought news, see Drought Impact Reporter.

Drought Management Resources (√):

- ✓ Watch AgDay TV
- ✓ Drought Impacts Webinar Series
- ✓ Quarterly Climate Summary and Outlooks for the Great Lakes, Midwest and Missouri Basin States
- ✓ The Spring 2014 edition of DroughtScape
- ✓ U.S. drought conditions stable in April; improvements unlikely in western states and much of plains

See: Latest Drought Impacts during the past week.





"The 49th and 50th States show relatively benign drought conditions. No changes noted for Alaska and Hawaii this week.

A comprehensive narrative describing drought conditions across other parts of the nation can be found toward the end of this document. For drought impacts definitions for the figures that follow, click here."

Weekly Snowpack and Drought Monitor Update Report

Risk Management Web Resources

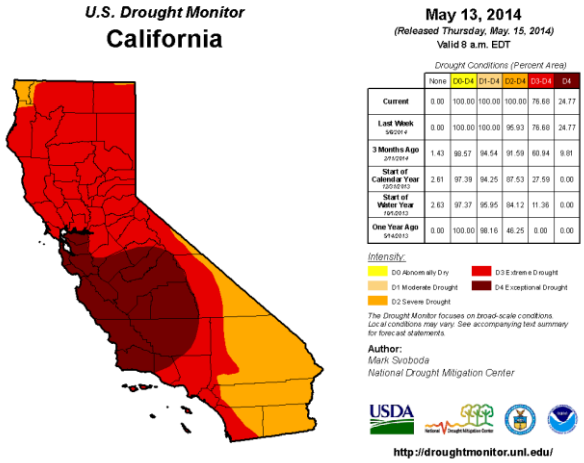
- ✓ Drought Monitor for the Western States
- ✓ Drought Impact Reporter for New Mexico
- ✓ California Data Exchange Center & Flood Management
- ✓ Intermountain West Climate Dashboard
- ✓ Great Basin Dashboard
- ✓ CLIMAS January 2014 Climate Summary
- ✓ *California Sierra Nevada-related snow pack*

U.S. Impacts during the past week

- 'Grim' winter leads to drought - May 8, **Oregon**

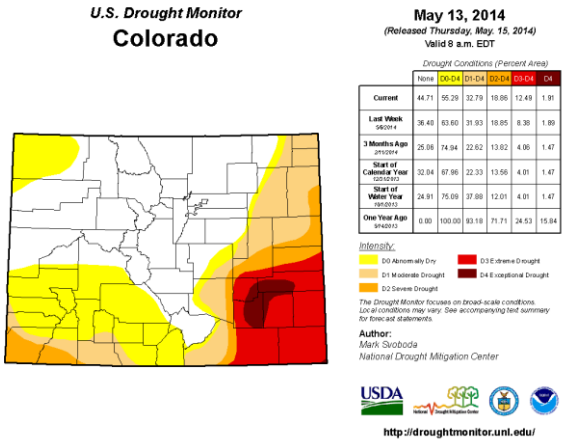
Click to enlarge maps

State with D-4 Exceptional Drought

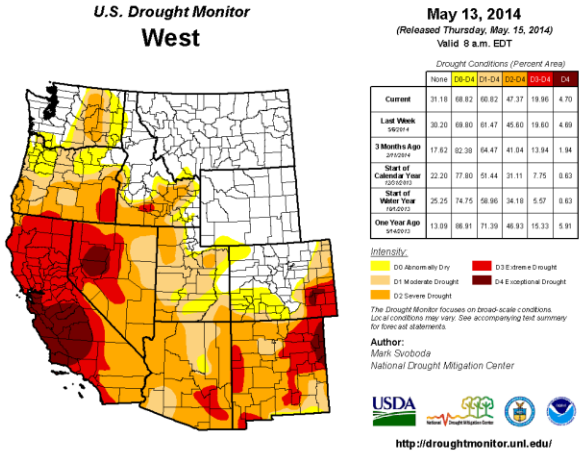


No changes occurred this past week.

State with D-4 Exceptional Drought



A 3% increase in D3 occurred this past week.

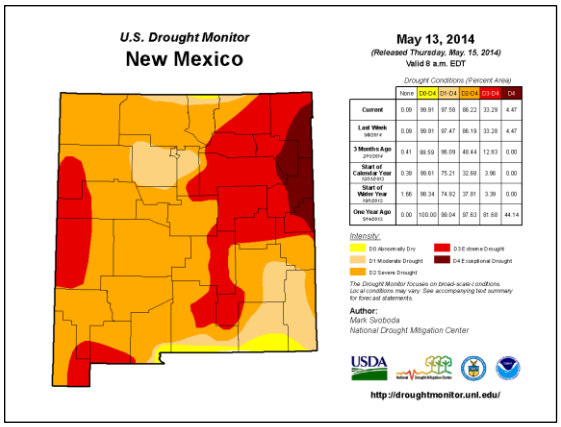


Slight worsening in D2 occurred this past week.

CA Drought Information Resources

Drought News from California

- Solar Seen Bailing California Out of Summer Hydro Shortage - May 9
- Drought triggers fire restrictions on federal lands - May 8
- Jerry Brown warns of dangerous wildfires in coming months - May 5
- Water district doubles key water conservation rebates until September - May 6
- Alameda County Water District mulls 13-percent water rate increase to mitigate drought effects - May 8
- Drought prompts weekend shutdown - May 9
- East County residents fear drought will also damage groundwater levels - May 5
- Little help for a million Californians on wells in historic drought - May 8
- Water flows uphill? Maybe, in California drought - May 6



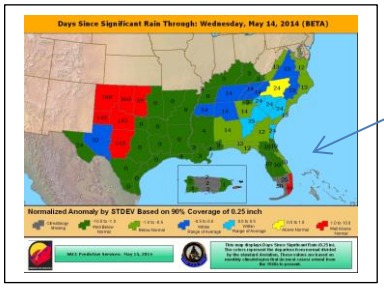
No significant changed occurred during this past week

- NM ranchers confront feds over water - May 8
- Drought speaks statewide long-term water discussions – May 10

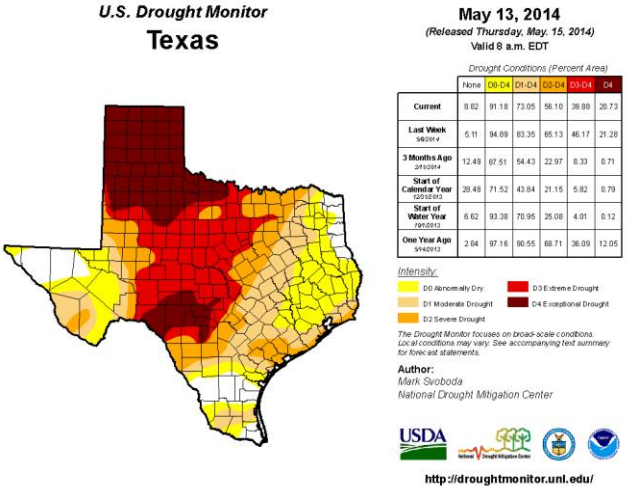
State with D-4 Exceptional Drought

- ✓ Texas Drought Website.
- ✓ Texas Reservoirs.
- ✓ **Texas Drought Monitor Coordination Conference Call: on Monday's 2:00 PM - 3:00 PM CST**

- Texas crop, weather: All major grain-producing areas experiencing some level of drought - May 7
- Soil conservation prevents repeat Dust Bowl
- Drought takes emotional toll; some praying for rain

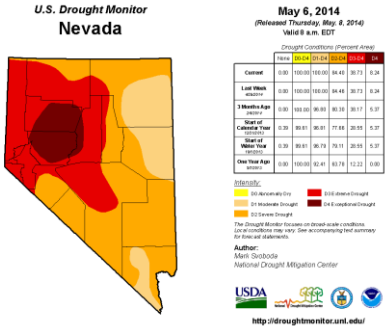


Days Since Significant Rain Summary



Significant decreases in all categories except D4 occurred during this past week as active weather moved through the state.

State with D-4 Exceptional Drought



No changes have occurred during this past week.

- Drought Prompts Irrigation Water Cuts in Fallon - May 9
- New BLM battle brewing over Lander County grazing - May 6

Related area news:

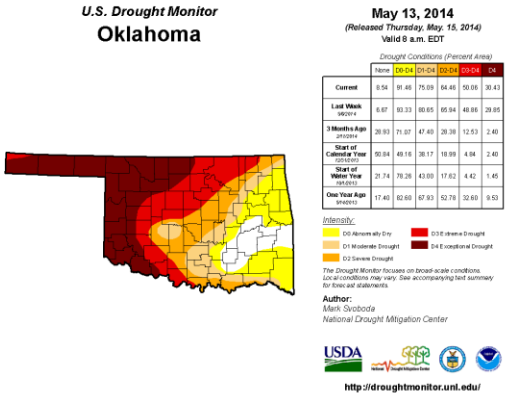
- ✓ 2014 Kansas Drought Report and Summary

- ***Past 30 days precipitation totals***
- ***Past 30 days precipitation percent of normal***
- ***Calendar Year precipitation totals***
- ***Calendar Year precip percent of normal***
- ***Short Crop ET***

Oklahoma drought news

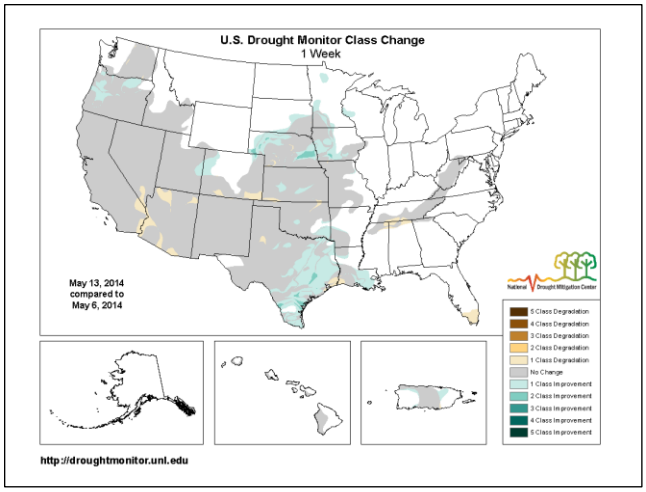
- Oklahoma residents survey wildfire damage; 1 dead - May 5
- Drought could make Oklahoma wheat harvest worst in decades – May 13

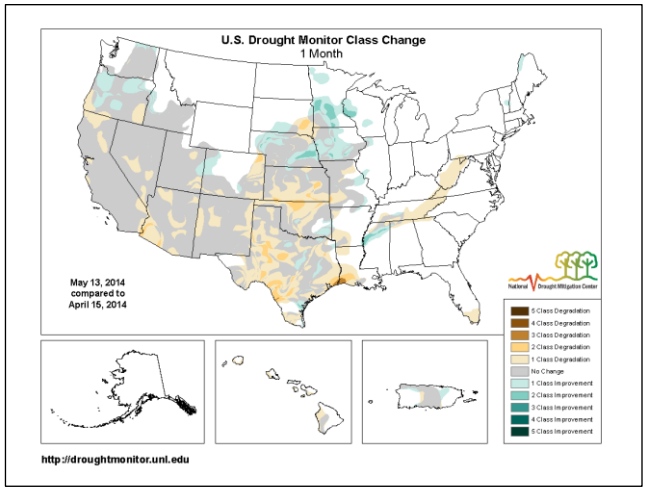
State with D-4 Exceptional Drought

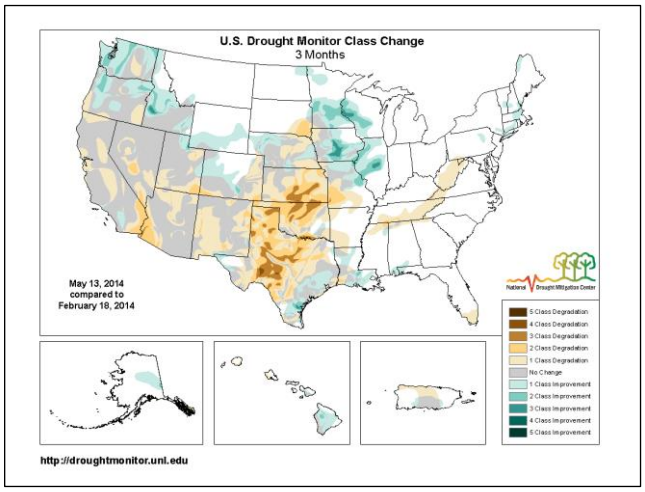


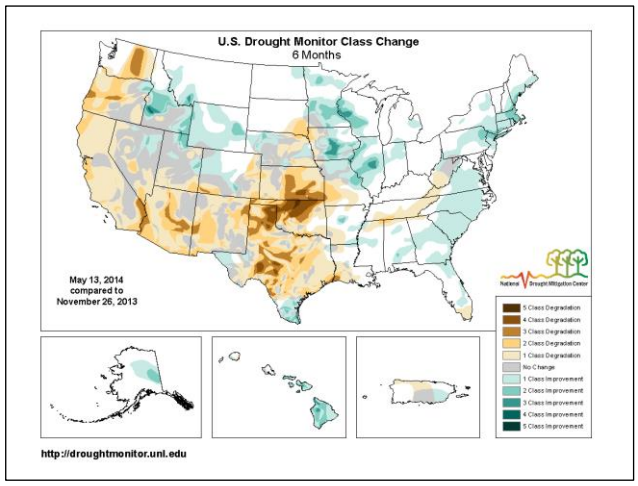
Slight deterioration in D3 and D4 has occurred this past week.

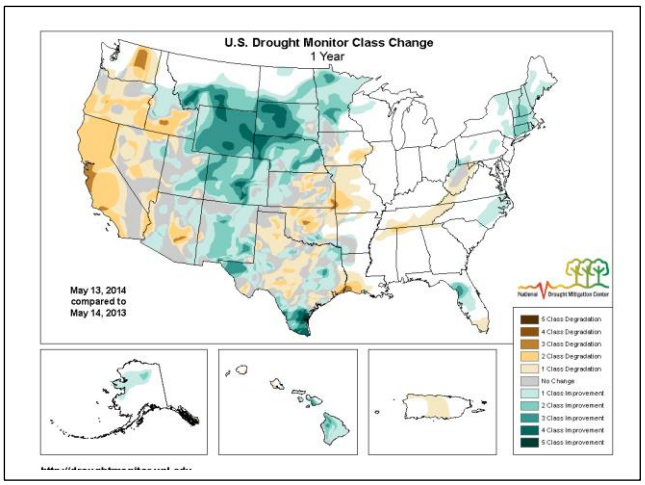
Changes in Drought Monitor Categories (over various time periods)

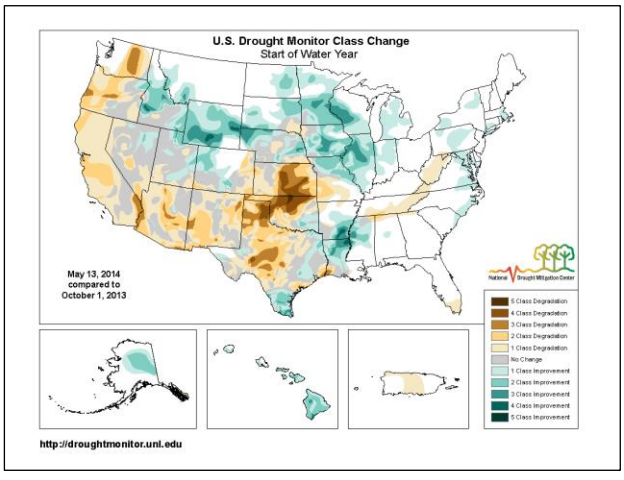






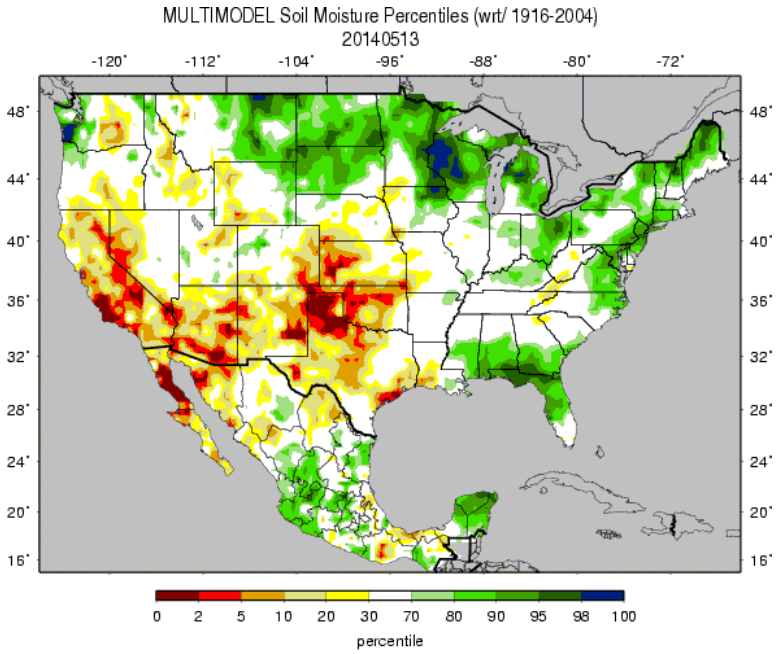






Click on any of these maps to enlarge. Note how the conditions over the Rockies and northern Great Plains have improved between 6 to 12 months (middle right to lower left maps). However, also note that since the start of the 2014 Water Year last October, conditions over the middle and southern Great Plains have deteriorated significantly (lower right map).

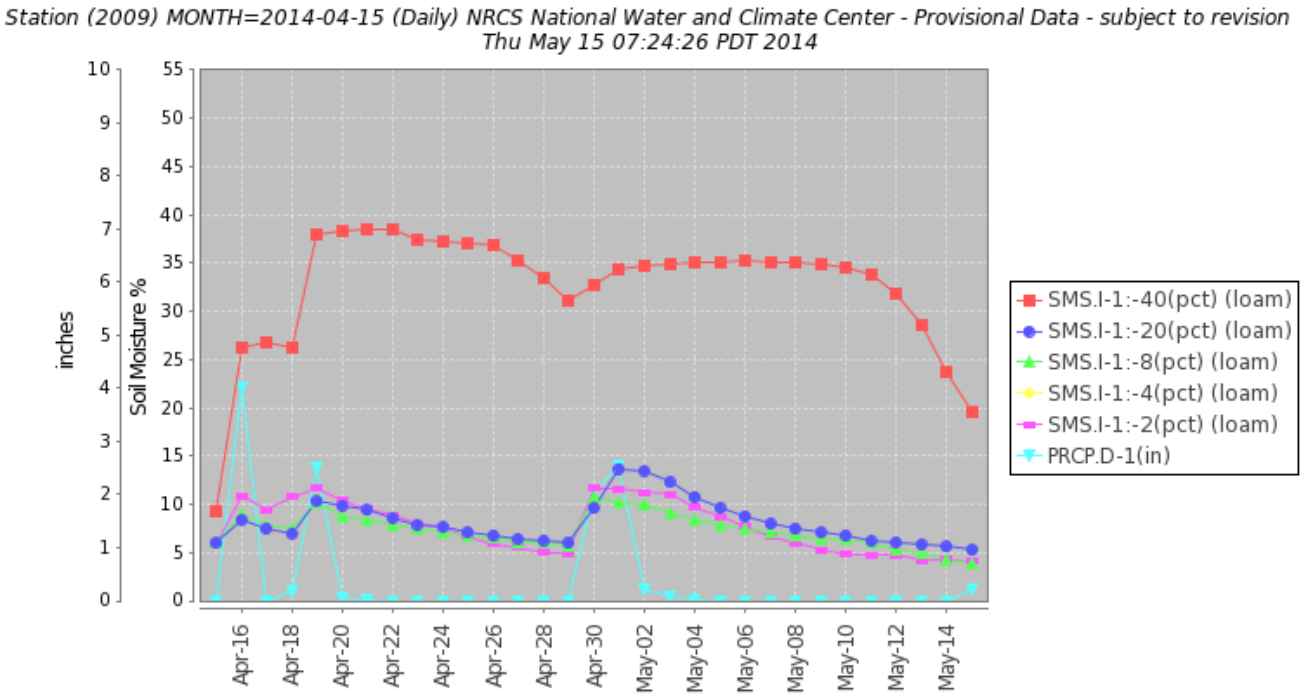
Soil Moisture



Soil moisture ranking in percentile as of May 13 shows dryness over central California, southern Arizona, eastern New Mexico, and the south-central Great Plains. Moist soils dominated the southern Gulf Coast states, parts of New England, and from central Montana eastward to the western Great Lakes.

Useful Hydrological Links: *Crop Moisture Index; Palmer Drought Severity Index; Standardized Precipitation Index; Surface Water Supply Index; Weekly supplemental maps, Minnesota Climate Working Group; Experimental High Resolution Drought Trigger Tool;* NLDAS Drought Monitor; Soil Moisture.

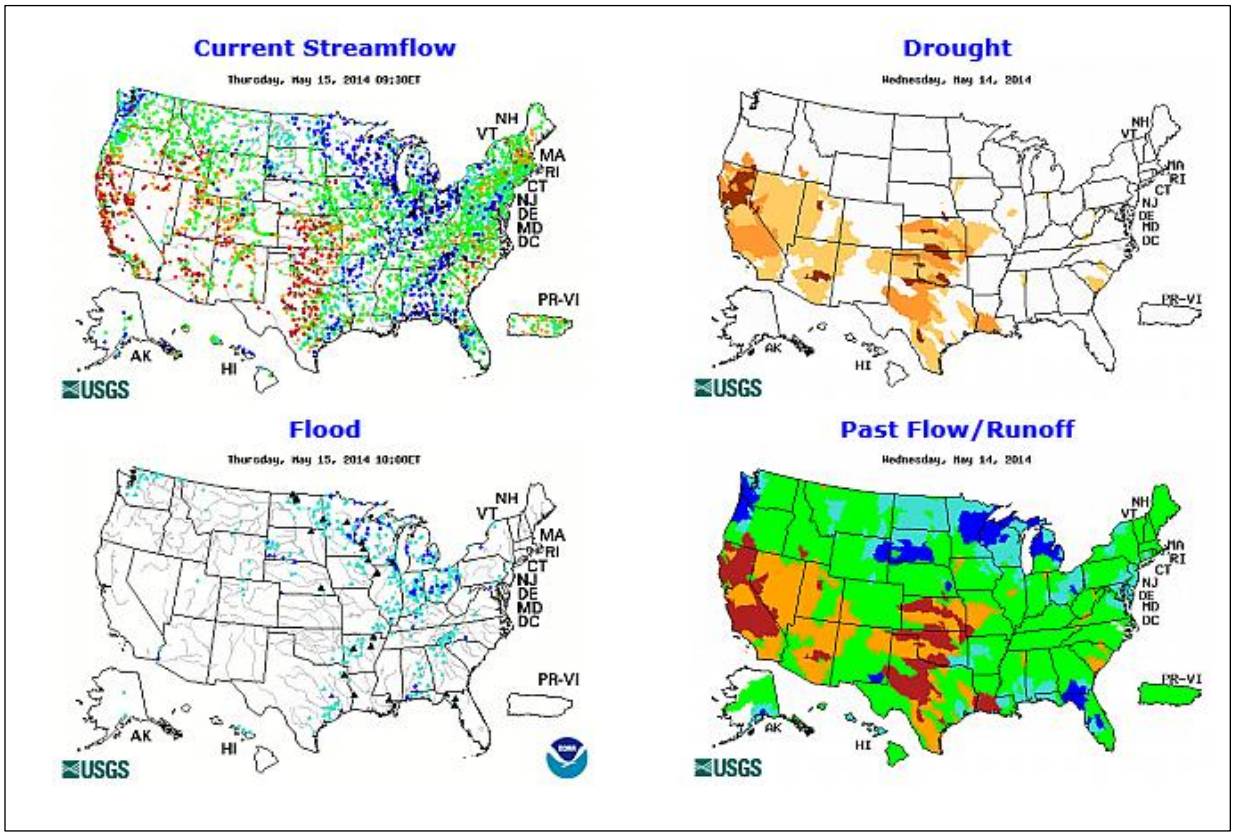
Soil Climate Analysis Network (SCAN)



This NRCS resource shows soil moisture data at a SCAN site located over the Panhandle of Florida. Note with recent heavy rains, a temporary improvement in soil moisture.

Useful Agriculture Links: *Vegetation Drought Response Index; Evaporative Stress Index; Vegetation Health Index; NDVI Greenness Map; GRACE-Based Surface Soil Moisture; North American Soil Moisture Network. Monthly Wild Fire Forecast Report.*

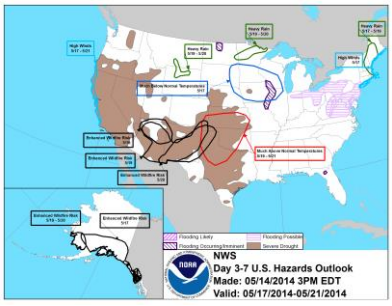
Streamflow



Streams are high over western Washington and very low over California and the Southern Great Plains (left maps). Some flooding is occurring over North Dakota and parts of the upper Mississippi River (lower left map).

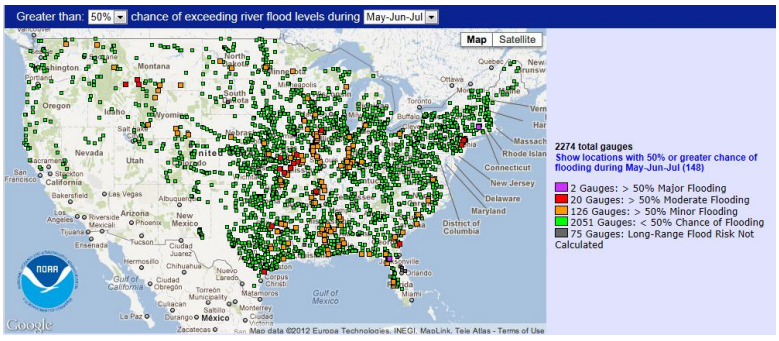
Click maps to enlarge and update

Weather hazards



High fire risk over the Southwest is the theme for the short range forecast. Hot weather is expected to dominate the southern and central Great Plains.

National Long Range Outlook



During the next three months, flooding is possible over the Red River Valley in North Dakota, the upper Midwest, and the middle Mississippi River Valley. Currently, **2** gauges have a greater than 50% chance to experience major flooding; **20** gauges for moderate flooding; **126** gauges for minor flooding.

These numbers represent a slight change since last week.

National Drought Summary for May 13, 2014

Prepared by: Drought Monitor Author: Mark Svoboda, NDMC

Hawaii, Alaska, and Puerto Rico

“Puerto Rico sees the only change this week with some slight trimming of D0 in the northeastern part of the island. Year-to-date and deficits out to six months keeps the rest of the D0 as is this week.

Conditions in both Alaska and Hawaii remain unchanged this week.

Midwest

Improvements continue across western Wisconsin, western Minnesota and parts of Iowa this week with the trimming of D0-D1 after beneficial rains fell during the past week. The D0 (L) areas in western Wisconsin and northern Minnesota have been removed this week as the recent wet conditions have led to improvement across all times scales out to the longer (12 months or more) time periods. Heavy rains in western Iowa led to the removal of D2 and a significant shrinking of the D0-D1 as well. Some minor trimming of D0-D1 also occurred in southeastern Iowa this week.

The Northeast and Mid-Atlantic

After a much quieter week weatherwise, the status quo remains, with abnormally dry conditions found along the Appalachians from northern West Virginia southward into eastern Tennessee, northern Georgia and northeastern Alabama.

The Plains

Heavy rains fell across western, northern and eastern Nebraska last week, leading to significant improvements in the Panhandle, where D0-D2 have been pushed back to the east and from the north to the south. The biggest improvements, however, were seen in east-central Nebraska, where the storms dumped anywhere from 3 to 5 inches or more, leading to reduction of drought and a pocket that is now drought-free with short-term and lingering long-term dryness/drought concerns eased for now. The recent wet trend continued across southeastern South Dakota as well, bringing more improvements with the reduction of D0-D1 there and across the border into Minnesota as described above.

Farther south, Kansas also saw a mixed bag this week with heavy but narrow bands of storms putting a small dent in the drought there, particularly in central Kansas where the D3 was trimmed, leaving D2 behind. Elsewhere in Kansas, though, the drought strengthened its grip and was accompanied last week by well above normal temperatures, leading to an expansion of D4 into the extreme southwestern reaches of the state to the Oklahoma border.

Oklahoma also felt those hotter temperatures along with some below-freezing readings late in the period, leading to more damage to the winter wheat crop, which has felt the brunt of a cold winter and coinciding drought. However, heavy rains did fall across the southeast corner of the state, bringing some 1-category improvement there.

In Texas, scattered totals of 2 to 4 inches fell across northeastern and eastern counties this past week, leading to some relative improvement with a push west and south of D0-D3 in these areas. In fact, the area of D3 located just off the coast in southern Texas has been removed this week. Some slight

trimming of the D4 was also seen this week in south-central Texas. Deep south Texas also shared in the improvements with the elimination of D2 and trimming of D0-D1. The southeast coastal region continued to miss out on the rains (although rains were falling in this region just after the cutoff time for the USDM production), leading to a push of D2 eastward into southwest Louisiana on this week's map.

The South

Heavy rains fell across southeastern Louisiana this past week, putting an end to a short-lived expansion of D0-D1 in the area last week. The D0-D1 has been pushed back to the west and a small area of D2 has moved into extreme southwestern/coastal Louisiana. The southwestern corner of Louisiana is seeing both short- and long-term dryness and drought, with deficits now standing about 10 to 15 inches below normal (50 to 70% of normal) dating back to last October. Good rains also fell in northwestern parishes last week, leading to some trimming of D0 there as well. In addition, a few pockets of heavier rain in western Arkansas led to some slight reduction of D0 there. Northwest Arkansas continues to dry out and bears watching for deterioration if the rains don't come soon.

The Southeast

Another dry and warmer week brings a slight expansion of D0 in northern Alabama and extreme northeastern Mississippi. A small pocket of D1 has also been introduced this week in an area where southern Tennessee, northwest Alabama and northeast Mississippi converge. Short-term totals back to the beginning of the year are now running 4 to 8 inches below average (50 to 75% of normal). D0 also makes an appearance this week in southern Florida as a result of both dry year-to-date totals and dryness dating back to last fall leading to deficits of 5 to 10 inches (50-70% of normal) since October 1, 2013.

The West

Most states in the West saw below-normal temperatures last week, helping preserve the precious liquid cargo contained in the upper elevations and reservoir systems. A mixed bag of improvements and deterioration is noted on this week's map. In Colorado, storms continue to avoid the southeastern corner of the state, leading to an expansion of D3 westward along with D0-D2 south of the Sangre de Cristo Mountain range. Notable improvement in the moisture situation in northwestern Colorado also leads to a reduction of D0, which also pushed improvement west into east-central Utah.

In Arizona, continued dryness leading up to the monsoon season means an expansion of D2 in the northwest, northeast and southern regions of the state.

A very favorable precipitation pattern for the calendar year-to-date (10 to 50% above the average) continued this past week, which has led to gradual improvement in the Pacific Northwest region as a whole. In Washington, the remaining dryness and drought has been reclassified to long-term (given the larger-scale wetness on the year-to-date) as denoted by the "L" and a resultant shift in the "L" impact line area found in Washington, Oregon and Idaho, as these areas are now connected. Most of the Willamette Valley improves to D0 from D1 this week and more of northeastern and north-central Oregon has also improved to D0. The southern half of Oregon remains unchanged.

All of California is now depicted as being in severe drought (D2) or worse this week, with the D3/D4 areas remaining unchanged. Attention this week turns to the heat wave settling in, which will only serve to exacerbate and accelerate drought impact concerns across the state. Increases on water demand and the increased risk of fire will ramp up as the heat does.

Looking Ahead

Over the next 5 days (May 14-19), the National Weather Service is calling for a strong system to bring widespread and locally heavy rains to much of the Southeast, Mid-Atlantic and Northeast. West of the Mississippi River looks to be pretty dry for the most part except for Arkansas, where an inch or so is expected across the eastern half of the state. As for temperatures, most of the West can expect temperatures to run 3 to 6 degrees (or more in the Great Basin) above normal. For just about everybody else east of the Rockies, temperatures are looking to stay cooler than normal at 3 to 10 degrees below normal.

This week's 6-10 day (May 20-24) day outlook from the Climate Prediction Center is showing a tilt in the odds toward above-normal temperatures in all but the interior of Alaska, the West Coast, Pacific Northwest, central Plains and Midwest, with below-normal temperatures expected in the Four Corner region and into the central Rockies as well as along the western Gulf Coast. As for precipitation during this period, above-normal precipitation is more likely in southeastern Alaska, most of the West Coast from central California up to Canada, southern New Mexico, the lower Mississippi Valley, the Southeast and the southern Mid-Atlantic region. Above-normal precipitation is looking favorable across the northern Great Lakes and Plains regions along with the Great Basin, central Rockies and western reaches of the southern Plains."

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State Activities

State government drought activities can be tracked through their drought plans. NRCS Snow Survey and Water Supply Forecasting (SSWSF) Program State Office personnel are participating in state drought committee meetings and providing the committees and media with appropriate SSWSF information. Additional information describing the tools available from the Drought Monitor can also be found at the U.S. Drought Portal.

More Information

The National Water and Climate Center (NWCC) Homepage provides the latest available snowpack and water supply information. This document is available weekly. CONUS Snowpack and Drought Reports from 2007 are available online. Reports from 2001-2006 are available on request.

This report uses data and products provided by the Interagency Drought Monitor Consortium members and the National Interagency Fire Center.

/s/
David W. Smith
Acting Deputy Chief, Soil Science and Resource Assessment

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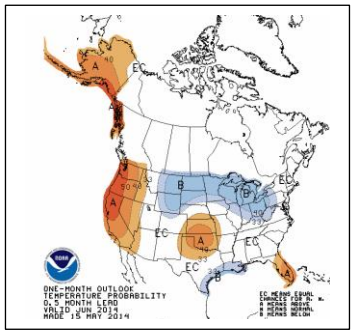
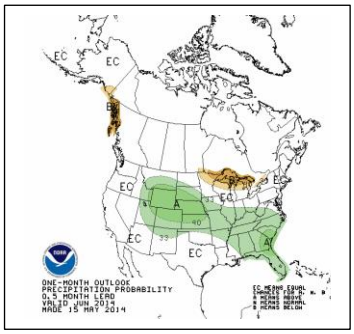
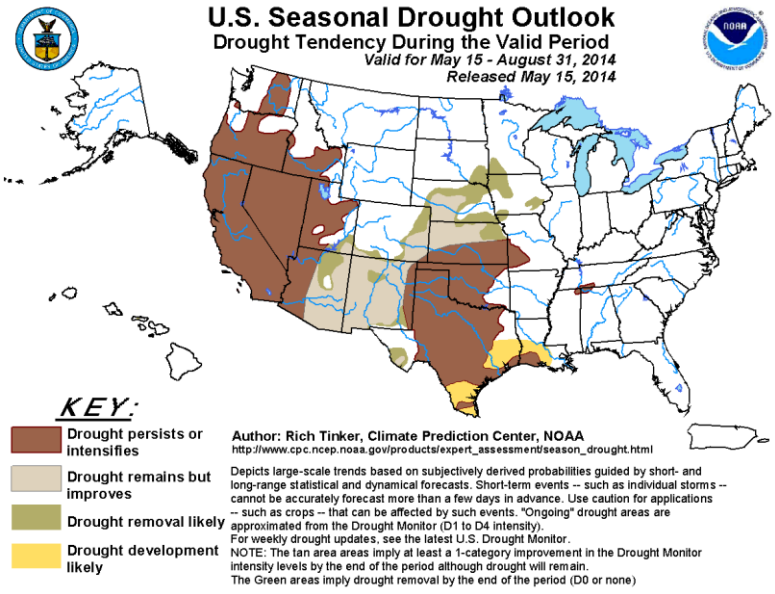




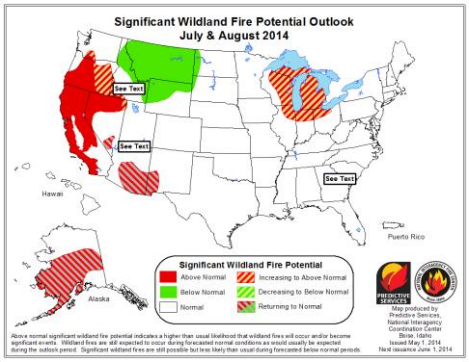
The latest NOAA CPC June and seasonal outlooks were released this morning. For June, warmer conditions are expected for the West Coast States, Oklahoma, and Florida, with cooler temperatures forecast for the northern tier states eastward from Montana. Wetter weather is expected from the northern Rockies to the southeastern states.

Drought Outlook For mid-May through August 2014

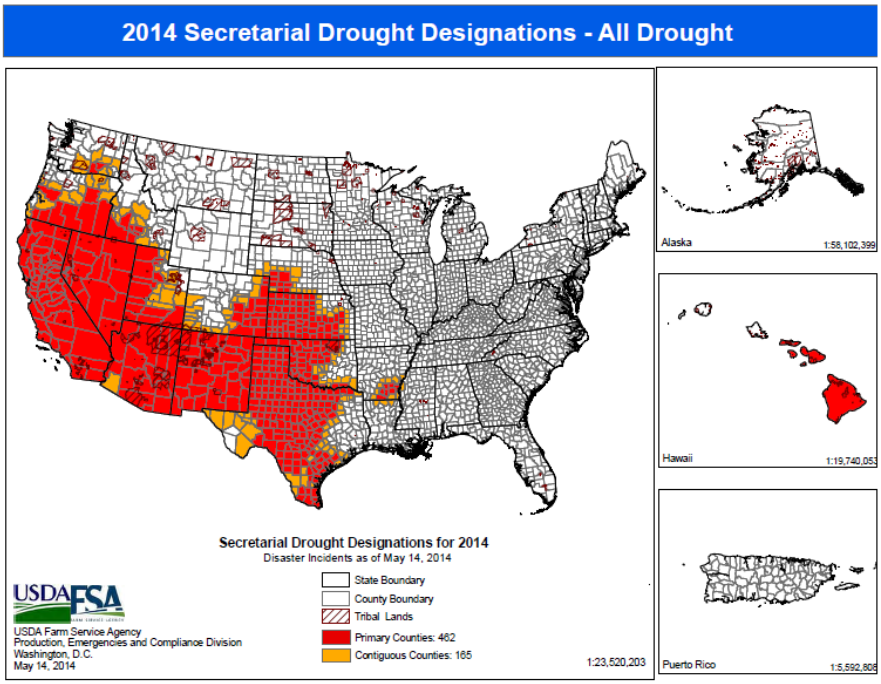


- Drought is expected to persist over much of the West and southern Great Plains. Improvements are expected from the Southwest to the central Great Plains.

✓ Also see: National Significant Wildland Fire Potential Outlook (updated on the **first** of each month) contains a content summary of the previous month's conditions.



July-August Forecast



Refer to the USDA Drought Assistance website and National Sustainable Agriculture Information Service.

Read about the new USDA Regional Climate Hubs.

New useful resource: NASS Quick Stats

Additional Maps

U.S. Maps PowerPoint presentation can be found at: http://dmcommunity.unl.edu/maps/US-Maps.ppt.

The regional zooms of ACIS station data percent-of-normal precipitation can be found at: http://dmcommunity.unl.edu/maps/All-CONUS-ACIS-PNP.pptx.

Supplemental Drought-Agriculture News

Download archived "U.S. Crops in Drought" files

"The following is a collection of drought-related news stories from the past seven days or so. Impact information from these articles is entered into the Drought Impact Reporter. A number of these articles will also be posted on the Drought Headlines page at the NDMC website. The list is compiled by Denise D. Gutzmer, Drought Impact Specialist, and National Drought Mitigation Center.

California
Water to move north through California Aqueduct
Five California water agencies concocted an innovative plan to move water north up the California Aqueduct to water parched crops, although water normally moves north to south in the aqueduct. State officials are assessing the plan and will announce their decision on whether to allow the water agencies to give this a try in June.

If approved, water from underground reservoirs in Kern County and other water supplies would be pumped into the aqueduct to raise the water level. Then diesel pumps would pump the water north over locks against the gravitational pull downhill. The aim is to move 30,000 acre-feet of water 33 miles from Bakersfield to Kettleman City.

Water agencies in the Bay Area are also eager to move water 70 miles against the normal flow of the aqueduct.

Californians with private wells
While an estimated million California residents depend on private wells for their domestic water, individuals are hard pressed to find help when wells go dry if they cannot afford the repair themselves. The state began to realize that there was a widespread problem when a drought hotline in Mendocino County began getting lots of calls from people needing help.

Conflicts related to grazing/water access
Grazing land to rest in Lander County, Nevada
The Battle Mountain Bureau of Land Management district manager requested that nine ranchers with grazing rights rest sensitive areas during the summer to allow the range to recover from three years of extreme drought. The range suffered damage and needs time to recover to remain a productive rangeland for livestock.

The ranchers were desperately searching for pasture for their livestock through the summer and feel that the BLM has not dealt fairly with them.

Fence preventing water access in Otero County in south central New Mexico
Ranchers and county commissioners in Otero County, New Mexico were at odds with the U.S. Forest Service over a new fence that the Forest Service erected to protect recovering river habitat. The fence also keeps thirsty cattle from easily accessing water from Agua Chiquita, infringing on ranchers' long-standing water rights. The core of the conflict is that the Forest Service manages land as it sees fit and does not respect water rights dating before 1907, which existed before the Forest Service began managing the land, including water flows.

The ongoing drought has intensified conflicts over access to water in New Mexico, said Reed Benson, a University of New Mexico law professor and water rights expert. With fewer water sources, there is more competition for the water.

Drought emergency in Jackson County, Oregon
Oregon's Gov. John Kitzhaber announced a drought emergency for Jackson County on May 7 in anticipation of water shortages and low stream flow due to the worst snowpack since record keeping began. Just one of the snow measuring sites in Jackson County had any snow left during the most recent snow survey. A hydrologist with the Natural Resources Conservation Service said this was "a new record low."

Mount Ashland did not open this year for the first time in its history, due to the lack of snow.

Texas ag report
Hot, dry conditions were delaying planting and ravaging rangelands and pastures in parts of the state.
In the southwestern part of the Rolling Plains, ranchers were forced to consider selling herds; water restrictions and shortages were widespread; and the sky was dusty brown much of the week from April 28 through May 4.

The South Plains of Texas has endured 29 days of blowing dirt since the start of 2014, with more such days forecast. During the same period in 2013, there were only 14 days of blowing dirt.

Water supplies remain the topic of most impacts for California and Texas in the Drought Impact Reporter.

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Tea Cup reservoir depictions:

- http://www.usbr.gov/uc/water/basin/ ← Upper Colorado
- http://www.usbr.gov/uc/wcao/water/basin/tc_gr.html; ← Upper Snake
- http://www.usbr.gov/pn/hydromet/burtea.html ← Upper Colorado
- http://www.usbr.gov/uc/water/basin/tc_cr.html ← Upper Colorado
- http://www.usbr.gov/pn/hydromet/select.html ← Pacific Northwest
- http://www.sevierriver.org/reservoirs/teacup-diagram-of-reservoirs/ ← Sevier River Water (UT)

NWCC's Surface Water Supply Index (SWSI) maps are located here.

Supplemental Data

The following is provided by Brad Rippey and Eric D. Luebehusen, USDA

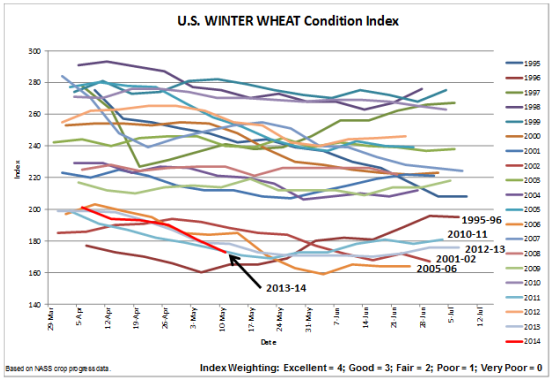
"U.S. winter wheat condition took another nosedive during the week ending May 11, 2014 – and that's before the latest freeze event.

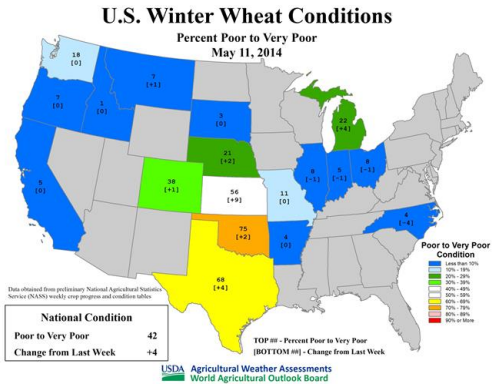
With lows dipping into the upper 20s and lower 30s across western Kansas on May 13, and 46% of the crop heading, statewide, by May 11, there is considerable risk for additional harm to already drought-injured wheat. (Regional heading numbers in Kansas by May 11 included 5% in the northwest, 24% in west-central, and 49% in the southwest). Low temperatures this morning included 30°F in Goodland and 32°F in Garden City. A smaller amount of wheat is vulnerable in Colorado, with 14% of the crop had headed by May 11. This morning's lows in southeastern Colorado, where much of the heading is occurring, included 30°F in Lamar and Springfield.

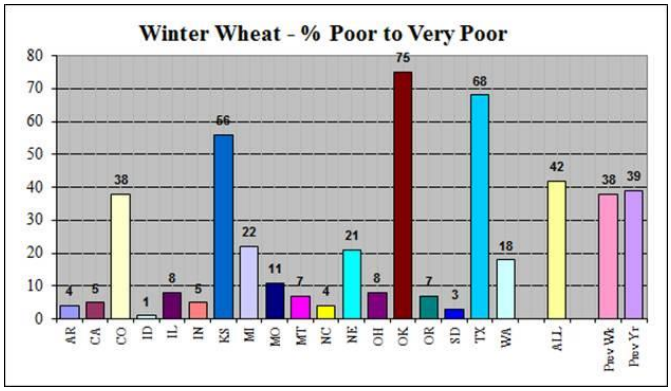
On May 11, the 2014 wheat condition is running neck-and-neck with 2011 for the second-worst crop rating in the last two decades. Only 1996 was worse, but that crop improved with May and June rainfall.

The NWS has already issued freeze watches for May 14 for southeastern Colorado and parts of West Texas.

Hard to believe, but it has been colder this late on the central High Plains. On May 13, 1966, for example, lows in southwestern Kansas included 25°F in Garden City and 32°F in Dodge City. In West Texas, however, the latest freezes on record occurred in Amarillo on May 7, 1917, and in Lubbock on May 8, 1938. NWS forecasts call for May 14 lows to fall into the middle to upper 30s in Amarillo and Lubbock."

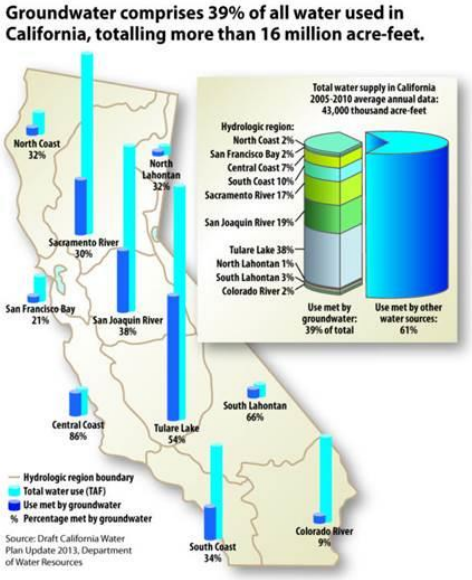






Report: Kings ground zero for deepened wells

May 8, **California**. A report from the California Department of Water Resources found that the Kings River and the Kaweah River sub-basins have the most deepened wells and the some of the worst groundwater overdraft. Many of the wells are not metered.



BOZEMAN, Mont., May 7, 2014–Data from the USDA Natural Resources Conservation Service (NRCS) SNOTEL (SnoTelemetry) sites shows Montana's April snowfall did not match the well above average precipitation experienced during February and March, but because Montana has not yet seen a major shift in weather patterns, snowmelt has been delayed and basin percentages of normal remain high.

Data shows most basins in the state exhibited peak snow water equivalent during the beginning and middle part of April, while some basins in southwest Montana and along the Continental Divide exhibited peaks at the end of the month. According to Lucas Zukiewicz, NRCS hydrologist, some snowmelt has occurred at lower to mid elevations, but higher elevations in the basins have seen little melt during the month, delaying when the bulk of snowmelt runoff enters river systems. "Assuming normal climatic conditions in the upcoming weeks, more advanced melt rates should begin to occur as days get longer with more solar influence and temperatures get warmer," Zukiewicz said.

Statewide SNOTEL and snow course data reported 155 percent of normal for May 1 and 149 percent of last year at this time. The Bitterroot River Basin currently has the highest basin percentage of normal in the state, indicating 188 percent of normal for May 1 and 199 percent of last year at this time. "Worth noting this month are the Missouri Mainstem, Tongue, and Powder River basins which reported the highest daily snow water equivalent values (SWE) since 1981," Zukiewicz said. "However, the 2014 peak snow water equivalent did not surpass those recorded 1997 and 2011."

Snow Water Content

River Basin	May 1 % of Median	% of Last Year
Columbia	159	148
Kootenai	145	126
Flathead	156	138
Upper Clark Fork	162	170
Bitterroot	188	199
Lower Clark Fork	164	138
Missouri	150	153
Missouri Headwaters	142	149

Jefferson	143	159
Madison	135	141
Gallatin	148	142
Missouri Mainstem	172	164
Headwaters Mainstem	180	186
Smith-Judith Musselshell	158	154
Sun-Teton-Marias	178	160
Milk	0	0
St. Mary	138	116
St. Mary & Milk	136	115
Yellowstone	157	153
Upper Yellowstone	166	166
Lower Yellowstone	149	144
Statewide	**155**	**149**

Zukiewicz said if snowmelt continues to be delayed in the mountains, the basin percentages of normal will continue to increase. “This time of year the daily normal value that we compare current snow water equivalent values to is decreasing as it generally represents a melting snowpack. If basin snow water equivalent decreases at a slower rate than the daily normal, or increases while the normal decreases, the basin percentages climb. Since the peak may have been observed in many of the basins, the basin percentages are indicating that there is a substantial amount of snow water left in the mountains for runoff this spring,” he said.

While April precipitation varied across the state, the statewide precipitation for April was slightly below average at 93 percent. The far western basins along the Idaho border and central part of Montana received well below average precipitation for the month. The overall water year-to-date precipitation totals since Oct. 1 still reflect above average precipitation (to date) in most basins. The statewide precipitation is currently 116 percent of average, and 115 percent of last year at this time.

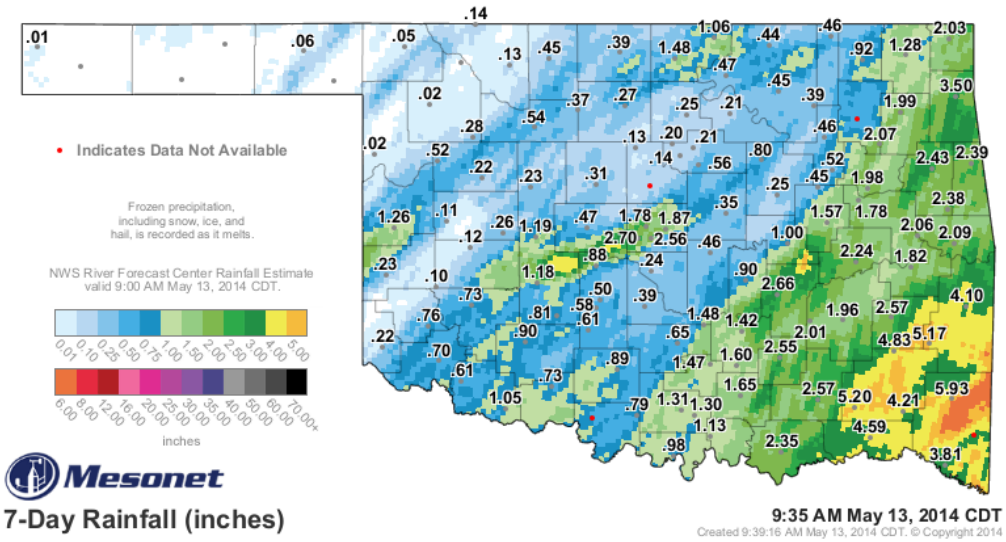
Streamflow Forecasts

Streamflow prospects continue to be well above average in most parts of the state. Statewide streamflow forecasts indicate 146 percent of the average May-July flows, and 152 percent of what was experienced last year. The Smith-Judith-Musselshell combined river basin continues to have the highest percentage of average May-July flows using the 50 percent exceedance forecast at 182 percent of average. The extreme headwaters of the Jefferson River basin continue to have the lowest forecasts in the state indicating 72 percent of average May-July flows for Lima Reservoir inflow and 80 percent for Clark Canyon inflow. For greater detail on spring runoff forecasts, consult the May 1 Water Supply Outlook Report.

Below are the averaged River Basin streamflow forecasts for the period May 1 through July 31. THESE FORECASTS ASSUME NEAR NORMAL MOISTURE AND RUNOFF CONDITIONS JANUARY THROUGH JULY.

May-July Streamflow Forecast Period		
River Basin	**Forecast as % of Average**	**This Year Forecast as % of Last Year Streamflow**
Columbia	148	130
Kootenai	122	132
Flathead	129	117
Upper Clark Fork	160	203
Bitterroot	158	207
Lower Clark Fork	144	155
Missouri	143	189
Missouri Headwaters	130	246
Jefferson	134	349
Madison	117	168
Gallatin	136	189
Missouri Mainstem	145	182
Headwaters Mainstem	146	184
Smith-Judith Musselshell	182	341
Sun-Teton-Marias	137	147
St. Mary	109	99
Milk (May-Sept % median)	108	121
Yellowstone	146	191
Upper Yellowstone	142	177
Lower Yellowstone	149	202
Statewide	**146**	**152**

Oklahoma this past week



Oklahoma 7-day total rainfall is a story of the haves and have not's.

*Six weeks ago, the weekly Snowpack and Drought Report had 6,221 subscribers. As of this report, the readership has increased to **8,500**. Those interested in automatically receiving this valuable report can sign up via GovDelivery. Many thanks to all for your continued feedback and support*